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Report of the Committee on University Affairs 1968-69





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**Report of the Committee on University Affairs**



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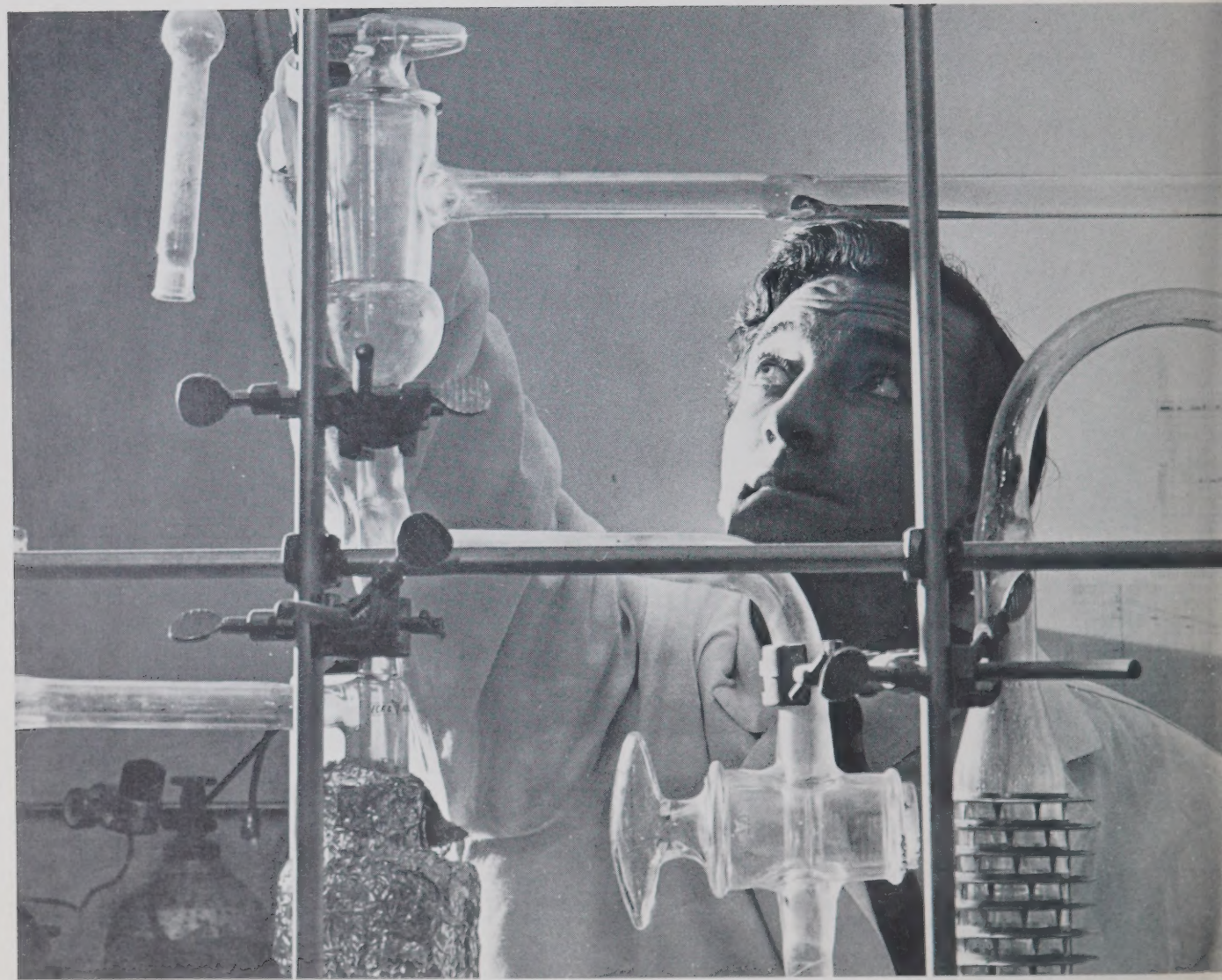
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The Honourable William G. Davis, Q.C.  
Minister of University Affairs  
Room 369  
Parliament Buildings  
Toronto 2, Ontario

Dear Mr. Davis

On behalf of the Committee on University Affairs I have the honour to present a report of the activities of the Committee for 1968-69.

The report contains, as well as a review of the formal actions of the Committee, some general discussion relating to new policy proposals now being prepared, and, for the first time, a detailed five-year forward view of university development in Ontario.

Yours sincerely

D. T. Wright  
Chairman, Committee on University Affairs.





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### Terms of reference

The Committee on University Affairs operates under terms of reference established by order-in-council which charge the Committee

to study matters concerning the establishment, development, operation, expansion and financing of universities in Ontario and to make recommendations thereon to the Minister of University Affairs for the information and advice of the Government.\*

Within these broad terms the Committee acts in response to requests from the Minister of University Affairs for advice on matters of concern, both in response to representations from universities, singly and collectively, and on its own initiative.

### Membership

The present membership of the Committee is as follows:

Dr. Douglas T. Wright (Chairman)

Dr. M. Elizabeth Arthur,

Professor of History, Lakehead University

Dr. Arthur N. Bourns

Professor of Chemistry and Vice-President, Science  
McMaster University

The Honourable Leslie M. Frost, P.C., Q.C.

Dr. George E. Gathercole

Chairman, The Hydro-Electric Power  
Commission of Ontario

Dr. Reva Gerstein

Honorary Fellow, Founders College  
York University

Mr. James O'N. Hughes

President and Chairman  
A. E. Ames and Company Limited

Dr. Maurice J. Lavigne

Manager, Physical Metallurgy Department  
Falconbridge Nickel Mines Limited

Mr. Robert W. Mitchell, Q.C.

Vice-President

Supertest Petroleum Corporation Limited

Dr. Roger J. Rossiter

Vice-President (Academic)

The University of Western Ontario

Dr. David W. Slater

Professor of Economics, Dean of  
Graduate Studies, Queen's University

The members of the Committee serve under annual renewable appointments made by order-in-council.

### Scope of concern

The Committee on University Affairs is responsible for advice concerning the fourteen provincially supported universities (Brock, Carleton, Guelph, Lakehead, Laurentian, McMaster, Ottawa, Queen's, Toronto, Trent, Waterloo, Western Ontario, Windsor and York), as well as Scarborough and Erindale Colleges of the University of Toronto, Algoma and Nipissing Colleges of Laurentian University, the Ontario College of Art, the Bar Admission Course, the Art Gallery of Ontario, the Royal Ontario Museum, and the Royal Botanical Gardens.

In 1968-69, the Committee on University Affairs has been concerned principally with general planning and policy development. The conditions are challenging. On the one hand, there are the pressures created by the great demand for higher education from a burgeoning population of university-aged young people, a greater proportion of whom seek admission to higher education each year. On the other hand, pressures on the funds available for all kinds of Government expenditures have become severe. The imperatives of developing a system of higher education of high quality, which is strongly responsive to social need and yet operates without extravagance or waste, are demanding.

This report attempts to define and describe the progress that has been made in the past year toward these ends. Such accomplishments as have been made reflect, on the one

\*Order-in-Council No. 4157/64; December 17, 1964.

hand, the support of the Department of University Affairs, as secretariat for the Committee on University Affairs and as the agency responsible for the administration of Government policies affecting universities and, on the other hand, the co-operation and efforts of the universities themselves, both individually and collectively, through the Committee of Presidents and its various adjunct and subsidiary bodies.

In 1968, the Committee on University Affairs held twenty-six meetings, of which twelve were convened at universities throughout the province. Following the shift from traditional budget review to formula financing in 1967, there has been a change in the character of the annual cycle of meetings through which the Committee develops its recommendations for university support. Both preceding and following the meetings with individual institutions, it has become the practice to hold meetings with the entire Committee of Presidents to discuss general levels of support, policy development, and other questions of common interest. This has been an important development for it reflects a significant diminution in competition amongst institutions for support, in favour of increased co-ordination and the development and application, generally, of common policies for all.

Individual meetings with universities have also changed significantly in character. Whereas only two or three years ago it was customary for universities to be represented by the Chairman of the Board of Governors, the President, and perhaps two or three other senior officials or Board representatives at meetings held in the Board Room of the Department of University Affairs in Toronto, these meetings are now almost invariably convened on university campuses, and the numbers of university representatives in attendance have increased severalfold. University delegations now regularly include significant numbers of members of Senate, academic staff, and students. Instead of discussing line-by-line details of proposed budgets, discussion focuses on planning and on the particular problems of the institution in various aspects of its operation and continuing development. The result has been to give the Committee on

University Affairs a much better view of the current state of the Ontario universities, and hopefully, a sounder basis for recommendations on various aspects of development and financial support.

With the increased size and representativeness of university delegations, the meetings have evolved to a form rather more in the nature of an "open" hearing. The Committee on University Affairs hopes to see this trend continued and confirmed so that its meetings with the universities may become open hearings with all documentation made public, save only in the case of matters where confidentiality is essential.

While the Committee on University Affairs has welcomed the development of meetings with the Committee of Presidents, which now includes academic representatives, and of meetings with individual universities, which generally involve students and faculty, it declined in 1968-69 to meet separately with particular interest groups representing students or faculty. At the first meeting of the Committee on University Affairs in the fall of 1968, representatives of the Ontario Union of Students appeared uninvited and sought to discuss questions of university administration and resource allocation. Later in 1968, the Ontario Confederation of University Faculty Associations (OCUFA) wrote requesting a meeting to discuss salaries and the portion of university income required for and devoted to salaries. In both cases, the Committee on University Affairs decided that, since it did not in general concern itself with and/or constrain internal university budgets or particular items of expenditure, it could not properly undertake such discussions without prejudicing university autonomy.

In the same vein, the Committee on University Affairs has observed with interest but not sought to influence the continuing development of reforms in governing structures for universities and the recent debate on the Americanization of academic staff. While the public interest is clearly involved, the Committee feels that such matters can be dealt with by the universities themselves without interference by Government.



In the meetings of the Committee on University Affairs held in the fall of 1967 to determine recommendations for operating support in 1968-69, efforts were made for the first time to provide a five year time base for fully detailed and comprehensive planning of new and continuing development. The universities were asked to prepare and submit in advance five year projections of enrolment in various categories, plans for program and faculty development, and plans for physical development. The meetings, which were lengthier than in previous years, were devoted to a complete review and examination of these plans. Such a process naturally provides for a much more orderly development of priorities and programs. It is hoped that, with much less effort, it will now prove possible each year to provide for an updated and renewed forecast on a rolling five year basis. This procedure, when coupled with the financial standards implicitly or explicitly reflected in operating and capital formulas, should provide maximum benefits for planning and management and for the early anticipation of problems and pressures.

The combination of the development of the formula structures for operating and capital support (which are discussed in more detail subsequently in this report) and the co-ordinating function performed by the Committee on University Affairs, all within the framework of a five year time base, may be identified as a disciplined but highly de-centralized planning/decision-making structure. Given the size of the Ontario university system, such a pattern appears most appropriate. The Committee on University Affairs believes that decision-making power and related responsibilities should be left as close as possible to the arena of action. While the increasing dependency of the universities on Government support might tend to lead to the transfer of more and more decision-making power to central authorities, it is clearly more in the public interest to cultivate competency and confidence in decentralized institutional decision-making structures with a minimum of central control.

It is already evident to the Committee on University Affairs that the use of formula financing for operating support is

fostering better management and more effective use of resources. To work well, such a decentralized system requires effective communications for the sake of broad understanding of general objectives and policies. For this reason, the Committee on University Affairs has strived to provide for the fullest understanding of its policies and the logic influencing its decisions. The Committee on University Affairs sees planning not so much as a straight jacket but rather as a general logical framework for the making of orderly decisions within a discipline that provides reassurance that there is no extravagance or waste and that the social purposes are being fulfilled for which tax monies are provided for higher education.

This report is thus primarily concerned with the development of general policy frameworks for the planning and financing of higher education in Ontario. Particular recommendations affecting individual institutions are not reported here in detail, but are reflected in the companion report of the Minister of University Affairs.

Although the bulk of the Committee's effort is devoted to university affairs, the Committee is also concerned with the Art Gallery of Ontario, the Royal Ontario Museum, and the Royal Botanical Gardens. Advice on financial support for these institutions continues to be given on the basis of traditional budget reviews. But just as the Committee on University Affairs has tried to develop long-term bases for planning universities, so it has come to feel that some comprehensive planning for provincially-assisted cultural institutions should be developed.

A prerequisite for this is a careful definition and sorting out of the roles of the various institutions. The present spectrum of roles is broad, and is reflected in the circumstance that several departments of Government are involved in the support of such institutions. In 1969, the Committee on University Affairs recommended that a special study be undertaken to define more precisely the relative roles and divisions of labour as amongst existing institutions, which, it was hoped, would lead to a basis for comprehensive planning and the establishment of priorities for such things as new capital

development over a reasonably long time base. Only within such a planning framework can the needs of the Royal Ontario Museum properly be assessed, and the prospect for the housing of the Henry Moore Collection by the Art Gallery of Ontario properly be planned in relation to the general needs of the Art Gallery.

To support the main work of the Committee on University Affairs in striving to develop such a planning system, the Committee on University Affairs has established a number of subcommittees. In almost every case the subcommittees function as technical working parties for policy development. A pattern has been developed through which most of these technical sub-committees comprise equal numbers of members nominated by the Committee on University Affairs and by the Committee of Presidents, with officials of the Department of University Affairs responsible for the analytical work and secretariat function.

Recommendations arising from the work of these sub-committees are directed to the Committee of Presidents and to the Committee on University Affairs and, in the case of major policy development, the Committee on University Affairs confers directly with the Committee of Presidents before rendering advice to the Minister. While this arrangement may appear to be cumbersome, it has the advantages that individuals with the most expert knowledge, representing all the interested agencies, are directly responsible for the technical work and that policy proposals are reviewed by the senior bodies most concerned before policy is determined. The technical subcommittees are, of course, not concerned with the development of recommendations concerning levels of grants and/or support for individual institutions. Such concerns remain the sole responsibility of the Committee on University Affairs. Rather, the subcommittees are concerned with the general logic and form of major policies, and the related standards. Their co-operation, then, does not compromise either the Committee of Presidents or the Committee on University Affairs with respect to opinions on questions of appropriate absolute levels of support.

In 1968-69, the following subcommittees were active:

1. *Joint Subcommittee on Finance (Operating Grants Formula)*

Dr. M. E. Arthur	}	Committee on University Affairs
Dr. D. W. Slater		
Dr. D. T. Wright, Chairman		

Dr. T. Batke	}	Committee of Presidents of Universities of Ontario
Mr. B. Hansen		
Mr. B. Trotter		

Mr. J. S. Bancroft, Secretary Department of University Affairs  
*This subcommittee is concerned with the revisions in and interpretations of the operating formula grants policy.*

2. *Joint Subcommittee on Capital Studies*

Mr. D. M. Hedden	C.P.U.O.	}	Co-chairmen
Dr. D. T. Wright	C.U.A.		

Dr. A. N. Bourns	}	Committee on University Affairs
Mr. R. W. Mitchell		

Mr. A. K. Adlington	}	Committee of Presidents of Universities of Ontario
Dr. W. G. Tamblyn		

Mr. J. D. McCullough, Secretary Department of University Affairs  
*This subcommittee is currently engaged in developing a structure and proposal for a formula for capital grants.*

3. *Subcommittee on Research*

Dr. A. N. Bourns, Chairman	}	Committee on University Affairs
Dr. R. Gerstein		
Dr. M. J. Lavigne		
Dr. R. J. Rossiter		

Mr. A. P. Gordon, Secretary Dept. of University Affairs



*This subcommittee is concerned with special programs for direct support of graduate students and research.*

#### 4. Joint Ad Hoc subcommittee on Regional Computing Centres

Dr. C. C. Gotlieb	C.P.U.O.	}	Co-chairmen
Dr. D. T. Wright	C.U.A.		

Dr. R. J. Rossiter	}	Committee on University Affairs
Dr. D. W. Slater		

Mr. P. J. Lewis	}	Committee of Presidents of Universities of Ont.
Dr. K. Okashimo		

Mr. R. E. Crate, Secretary	Department of University Affairs
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*This subcommittee, which was established in 1968 and completed its work in 1969, was concerned with the general development of policies for financial support for computers.*

#### 5. Special Ad Hoc Committee on Support for Medical Education

Dr. R. Gerstein	}	Committee on University Affairs
Mr. J. O'N. Hughes		
Dr. D. T. Wright, Chairman		

Dr. K. C. Charron	}	Ontario Council of Health
Dr. W. J. Dunn		
Dr. G. Reid (July 26, 1969, meeting)		
Mr. S. W. Martin (Oct. 30, 1969, meeting)		

Dr. A. L. Chute	}	Ontario Universities
Mr. L. G. Macpherson		
Dr. R. Guindon, (July 26, 1969, meeting)		
Dr. J. R. Evans (July 26, 1969, meeting)		

Mr. A. P. Gordon, Secretary	Dept. of University Affairs
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*This special committee was formed to consider revisions for the weighting of enrolment in medicine required because of increased costs associated with the change from part time to geographic full time appointments for teaching in clinical subjects and a greater emphasis on research.*

In subsequent parts of this report, particular aspects of the work of these subcommittees are reviewed.

A more detailed description of the work of the Committee on University Affairs is contained in the previous report of the Committee.\* Many general observations made in that report are still valid. The companion reports of the Minister of University Affairs† provide statistical and other information. Most of the subjects dealt with in this report are also discussed in the Second and Third Annual Reviews of the Committee of Presidents.‡ While the different views of the same subjects contained in the CPUO and CUA reports may not necessarily lead to binocular vision, reading the two in conjunction will certainly lead to better insight.

\*Report of the Committee on University Affairs 1967

†Report of the Minister of University Affairs of Ontario 1967  
Report of the Minister of University Affairs of Ontario 1968-69

‡*Collective Autonomy*, Second Annual Review of the Committee of Presidents of Universities of Ontario, 1968  
*Campus and Forum*, Third Annual Review of the Committee of Presidents of Universities of Ontario, 1969





As already described, one of the most important tasks carried out by the Committee on University Affairs in 1968-69 was a general planning review for the five year period 1969-70 to 1974-75. While much more work is clearly needed before final determinations can be made and priorities set, the picture that emerged from this first long-term detailed review was gratifying. Development is proceeding in an orderly and disciplined fashion. The constraint exercised by the operating grants formula in inhibiting program development where viable enrolment cannot be forecast is quite conspicuous. While the five years, 1964-65 to 1968-69, witnessed a considerable expansion of programs in the older established universities as well as in the new ones, the prospect for the next five years is for a much more modest growth in the number of programs while continued rapid enrolment growth offers a general prospect of significant economies of scale. Well before 1974-75, almost all programs in Ontario universities will have achieved scales of enrolment that will make them viable both academically and economically.

It has been a significant accomplishment for Ontario to create a large number of new universities in the 1960's and to have them mature so quickly. Universities of sub-viable scale necessarily have higher unit costs of operation than those of viable scale. The situation in Ontario contrasts sharply, for instance, with that in Britain where, of some 40 universities, 20 have an enrolment of less than 2,000, with relatively slow rates of growth and no early prospect of an economic operating scale.

Evidence of continuing adaptation by the Ontario universities to the changing environment and the modern needs for scholarship is seen in various major reforms in established academic programs, and in the inauguration of certain new programs of a novel character. By far the most significant of such developments is the implementation in the University of Toronto of the recommendations of the Macpherson Report\* which have led to a radical

reorganization of the traditional structure of general and honours programs in the Faculty of Arts and Science.

For the Ontario universities, Table 1 shows enrolment projections for the five year planning period. The Committee on University Affairs feels that projections of undergraduate enrolment are quite realistic, but that more study is needed with respect to graduate enrolment which appears to be projected to grow at a rate larger than could be achieved without the importation of substantial numbers of graduate students.

Planning for university enrolment can be undertaken in any one of three different ways. In some jurisdictions, university enrolment has been related to manpower planning studies in a closely coupled deterministic fashion. While superficially attractive, such efforts have hardly ever been generally effective or successful because of the great difficulty of projecting long-term occupational spectra. Whole industries rise and fall on a time base of twenty years or less while the average working life of an individual is now 40 years or more. Beyond such uncertainties, traditional freedoms in the selection of occupations in our society do not accord well with deterministic manpower planning. None of this is to suggest that every effort should not be made to develop much better information about trends in employment, and manpower requirements in various specific occupations. But such information should be used as feedback for the system rather than as a straight jacket.

A second possible basis for planning university enrolment is to attempt to maximize rates of return on public investments by investing in those sectors which analyses show to be most productive. While it may be fair and necessary to study such aspects, this approach may also be rejected readily as a general basis for planning. Many benefits other than economic returns are derived by society from the university.

The third approach, of course, is to plan primarily for social demand; that is, the desires of young people. With adequate information, there is every indication that young people are generally well able to assess the appropriateness and

\**Undergraduate Instruction in Arts and Science*, Report of the Presidential Advisory Committee on Undergraduate Instruction in the Faculty of Arts and Science, University of Toronto, 1967.

**TABLE 1a**  
Full time freshman intake

Institution	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75
Brock	730	1,090	1,270	1,410	1,500	1,650
Carleton	2,100	2,156	2,310	2,460	2,610	2,750
Guelph	1,797	2,160	2,360	2,680	2,895	3,250
Lakehead	795	805	875	940	1,005	1,070
Laurentian	643	609	685	753	799	896
Algoma	140	200	250	300	400	500
Nipissing	60	100	125	150	200	250
McMaster	2,252	2,409	2,749	3,049	3,199	3,368
Ottawa	1,331	1,609	1,629	1,740	1,873	1,986
Queen's	1,775	1,870	1,935	2,023	2,064	2,100
Toronto	3,768	3,600	3,610	3,620	3,645	3,680
Scarborough	860	870	1,030	1,190	1,380	1,420
Erindale	552	600	770	950	1,040	1,190
Trent	565	664	780	900	1,020	1,150
Waterloo	2,972	2,964	3,133	3,317	3,485	3,575
Western	2,790	2,880	3,000	3,190	3,320	3,460
Windsor	1,731	1,995	2,187	2,395	2,614	2,854
York	2,661	2,980	3,300	3,590	3,850	4,065
<b>TOTAL</b>	<b>27,522</b>	<b>29,561</b>	<b>31,998</b>	<b>34,657</b>	<b>36,899</b>	<b>39,114</b>

*Basis: Full term teaching service performed, as calculated for purposes of grants.*

**TABLE 1b**  
Total full time undergraduate

*Including diploma and other non-degree and make-up or qualifying year*

Institution	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75
Brock	1,440	2,150	2,690	3,170	3,580	3,950
Carleton	5,921	6,250	6,700	7,130	7,560	7,980
Guelph	5,285	5,889	6,436	7,022	7,709	8,474
Lakehead	2,393	2,560	2,755	2,930	3,110	3,285
Laurentian	1,550	1,688	1,899	2,189	2,369	2,576
Algoma	140	200	250	300	400	500
Nipissing	60	100	125	150	200	250
McMaster	5,955	6,286	6,976	7,881	8,560	9,204
Ottawa	5,940	6,348	6,517	6,960	7,490	7,942
Queen's	6,374	6,568	6,742	7,023	7,261	7,437
Toronto	15,743	15,890	15,910	16,020	16,150	16,300
Scarborough	1,700	2,000	2,350	2,700	3,050	3,400
Erindale	940	1,300	1,650	2,000	2,350	2,700
Trent	1,285	1,540	1,825	2,130	2,450	2,800
Waterloo	6,596	7,342	7,888	8,419	8,979	9,585
Western	8,289	8,510	8,980	9,550	9,920	10,185
Windsor	4,873	5,658	6,384	6,993	7,648	8,343
York	7,293	8,900	10,200	11,300	12,300	13,200
<b>TOTAL</b>	<b>81,777</b>	<b>89,179</b>	<b>96,277</b>	<b>103,867</b>	<b>111,086</b>	<b>117,881</b>

*Basis: Full term teaching service performed, as calculated for purposes of grants.*



**TABLE 1c**  
**Total graduate**

Institution	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75
Brock	19	38	62	83	104	120
Carleton	614	845	940	1,050	1,155	1,260
Guelph	542	657	750	863	1,021	1,181
Lakehead	43	45	50	55	60	65
Laurentian	—	51	69	81	98	110
Algoma	—	—	—	—	—	—
Nipissing	—	—	—	—	—	—
McMaster	1,354	1,515	1,744	1,950	2,102	2,236
Ottawa	1,023	1,220	1,462	1,611	1,763	1,931
Queen's	950	1,116	1,380	1,500	1,610	1,730
Toronto	3,810	4,230	4,460	4,660	4,940	5,160
Scarborough	—	—	—	—	—	—
Erindale	—	—	—	—	—	—
Trent	3	15	25	35	45	55
Waterloo	1,243	1,286	1,391	1,523	1,647	1,755
Western	1,256	1,450	1,650	1,770	1,900	2,000
Windsor	314	361	415	480	553	637
York	514	750	840	1,000	1,130	1,250
<b>TOTAL</b>	<b>11,685</b>	<b>13,579</b>	<b>15,238</b>	<b>16,661</b>	<b>18,128</b>	<b>19,490</b>

*Basis: Fall term teaching service performed, as calculated for purposes of grants.*

**TABLE 1d**  
**Total full time enrolment**

Institution	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75
Brock	1,459	2,188	2,752	3,253	3,684	4,070
Carleton	6,535	7,095	7,640	8,180	8,715	9,240
Guelph	5,827	6,546	7,186	7,885	8,730	9,655
Lakehead	2,436	2,605	2,805	2,985	3,170	3,350
Laurentian	1,550	1,739	1,968	2,270	2,467	2,686
Algoma	140	200	250	300	400	500
Nipissing	60	100	125	150	200	250
McMaster	7,309	7,801	8,720	9,831	10,662	11,440
Ottawa	6,963	7,568	7,979	8,571	9,253	9,873
Queen's	7,324	7,684	8,122	8,523	8,871	9,167
Toronto	19,553	20,120	20,370	20,680	21,090	21,460
Scarborough	1,700	2,000	2,350	2,700	3,050	3,400
Erindale	940	1,300	1,650	2,000	2,350	2,700
Trent	1,288	1,555	1,850	2,165	2,495	2,855
Waterloo	7,839	8,628	9,279	9,942	10,626	11,140
Western	9,545	9,960	10,630	11,320	11,820	12,155
Windsor	5,187	6,019	6,799	7,473	8,201	8,980
York	7,807	9,650	11,040	12,300	13,430	14,450
<b>TOTAL</b>	<b>93,462</b>	<b>102,758</b>	<b>111,515</b>	<b>120,528</b>	<b>129,214</b>	<b>137,371</b>

*Basis: Fall term teaching service performed, as calculated for purposes of grants.*

**TABLE 1e**  
**Full time equivalent of part time enrolment**  
*Using formula conversion factors*

Institution	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75
Brock	240	303	368	426	482	525
Carleton	1,607	1,595	1,723	1,854	1,974	2,105
Guelph	87	60	60	60	60	60
Lakehead	467	476	493	509	526	543
Laurentian	506	591	650	683	733	800
Algoma	201	245	294	352	422	506
Nipissing	92	75	79	83	88	91
McMaster	1,154	833	869	908	951	999
Ottawa	1,865	1,977	2,095	2,221	2,354	2,495
Queen's	1,036	1,000	1,000	1,000	1,000	1,000
Toronto	2,096	1,970	1,990	2,020	2,050	2,070
Scarborough	155	167	200	217	258	267
Erindale	100	133	167	208	250	283
Trent	117	115	125	135	145	155
Waterloo	269	435	627	816	1,003	1,190
Western	1,259	1,500	1,600	1,700	1,750	1,800
Windsor	1,087	1,180	1,306	1,447	1,606	1,785
York	2,094	2,430	2,830	3,120	3,460	3,720
<b>TOTAL</b>	<b>14,432</b>	<b>15,085</b>	<b>16,476</b>	<b>17,759</b>	<b>19,112</b>	<b>20,394</b>

*Basis: Fall term teaching service performed, as calculated for grant purposes.*

**TABLE 1f**  
**Total full time equivalent enrolment**

Institution	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75
Brock	1,699	2,491	3,120	3,679	4,166	4,595
Carleton	8,142	8,690	9,363	10,034	10,689	11,345
Guelph	5,914	6,606	7,246	7,945	8,790	9,715
Lakehead	2,900	3,081	3,298	3,494	3,696	3,893
Laurentian	2,056	2,330	2,618	2,953	3,200	3,486
Algoma	341	445	544	652	822	1,006
Nipissing	152	175	204	233	288	341
McMaster	8,463	8,634	9,589	10,739	11,613	12,439
Ottawa	8,828	9,545	10,074	10,792	11,607	12,368
Queen's	8,360	8,684	9,122	9,523	9,871	10,167
Toronto	21,649	22,090	22,360	22,700	23,140	23,530
Scarborough	1,855	2,167	2,550	2,917	3,308	3,667
Erindale	1,040	1,433	1,817	2,208	2,600	2,983
Trent	1,405	1,670	1,975	2,300	2,640	3,010
Waterloo	8,108	9,063	9,906	10,758	11,629	12,330
Western	10,804	11,460	12,230	13,020	13,570	13,955
Windsor	6,274	7,199	8,105	8,920	9,807	10,765
York	9,901	12,080	13,870	15,420	16,890	18,170
<b>TOTAL</b>	<b>107,891</b>	<b>117,843</b>	<b>127,991</b>	<b>138,287</b>	<b>148,326</b>	<b>157,765</b>

*Basis: Fall term teaching service performed, as calculated for grant purposes.*

desirability of alternative courses of action. Manpower studies, in this framework, provide essential feedback for regulation and such an approach accords, of course, with generally accepted notions of individual freedom and responsibility.

The policies that have been adopted in Ontario for financing universities make the system responsive to social demand, inasmuch as university grants are made a direct function of the number of students enrolled in various programs. The system can be characterized, in a sense, as being market-responsive.

While the system seems to be responsive to and regulated by demand at the undergraduate level, the situation is not so naturally self-regulated at the graduate level. Part of the reason for this is that the number of graduate students is determined not so much by social demand as by the patterns of financial support made available to graduate studies by the universities and the various research agencies. There exists an increasing concern at the fact that such patterns of support are sluggish and slow to change. Graduate studies are, of course, much more international than undergraduate studies. That this is appropriate for Canada may be argued in at least two ways. First, Canada and Canadians have benefitted very greatly for many years from the opportunities made available in other countries (particularly the U.S.A. and Britain) to undertake specialized research studies there. Canada's indebtedness may perhaps be most effectively repaid through providing opportunities, now, for students from less developed parts of the world to perfect various specialties in which Canada has special knowledge and skills to pass on. Rather more selfishly, it may be argued that Canada benefits greatly from the use of the graduate school as a device for promoting immigration of high-level manpower. During the past year it became clear that, because of the complexity of these various issues, more careful study was required to provide a basis for planning for graduate enrolment in the Ontario universities. The Ontario Council on Graduate Studies has agreed to undertake studies to provide more complete information about

the origins of graduate students and about their destinations and activities after graduation. The availability of such data, along with information concerning recent historical trends, should provide a basis for planning and for whatever policies may be necessary to achieve desired results in the absence of any effective natural regulation. Notions of quotas of any sort are distasteful and it is hoped that other and better ways can be found.

The figures tabulated confirm the view that presently established universities can carry the continuing burden of expansion to the mid 1970's at least. But if new universities should be needed to carry any substantial enrolment by the end of the 1970's, the foundations would have to be laid well before 1975.



**The formula in use**

Continuing experience with the operating grants formula in use confirms the expectation that the benefits provided by such an objective device for testing aid and assigning resources would outweigh the disadvantages. The principal advantage of the formula is clearly in its implications as a planning device in rewarding good management and in promoting efficiency, improved productivity, and rationalization. From the point of view of Government, the formula can be used as a device either to allocate a fixed sum, alone, or to provide an objective measure for the determination of the absolute magnitude of total obligation. It is clear that the latter is preferable, but it does lead to a prospect of requirements for extra support if enrolment overruns expectations.

The change from the traditional "add-on" style of budgeting, associated with line-by-line scrutiny of budget proposals is of critical importance. The 1968 meetings of the Committee with the individual universities indicated how, after only one year of actual experience with the formula (1967-68), internal budgeting procedures were changing. Senates and other academic bodies are assuming much more responsibility for resource allocation in the universities, and with this is coming more critical and realistic intra-institutional reviews of new program proposals. With the unit multiplier set for a given year and total resources determined by the formula rather than by the persuasiveness of university representatives at hearings with the Committee on University Affairs, the traditional relationship between faculty and administration also apparently has tended to change. Where, previously, the administration was seen as functioning to win support for ever-increasing academic aspirations, administrative officials and academic staffs now seem to be drawn together to wring the maximum benefit out of the resources allocated.

At the time the operating grants formula was being developed it was made clear and explicit that the formula weights should not constrain internal resource allocations. The Committee on University Affairs has been interested to

note the different patterns of evolution in university budgeting which have resulted.

In some cases, universities have developed their own formulas for internal allocation, with weights different from those used to allocate resources amongst universities on a province wide basis. Such a development, acknowledging the special character of an institution, seems entirely appropriate.

There have been suggestions that program budgeting techniques should be adopted by the Committee on University Affairs. If this were done, it would necessarily lead to earmarked control of internal allocations to faculties, departments and individual programs in the universities. There could be no quicker route to the loss of autonomy and independence. The only basis for program budgeting for higher education on a province-wide basis is in terms of a "program" interpreted on a macro basis. On the other hand, it seems clear that program budgeting could be applied with benefit within individual universities.

It is regrettable that some confusion has arisen obscuring the very important differences between the Ontario operating grants formula and so-called "budget formulas" as used in a number of American states for financing universities and colleges. "Formula budgeting" provides for the earmarking of budgets for many finely divided categories of expenditure according to more or less rigid standards (for class sizes, teaching loads, faculty/student ratios) which lead to homogenization and uniformity, with little opportunity for local discretion in resource allocation. "Formula budgeting" has naturally come under considerable attack in the United States, and because of the similarity of terms, some of this criticism has been reflected on the Ontario system for formula grants. The two systems are, of course, profoundly different.

**Increments in formula multiplier**

The principal feature of the operating grants formula is that a single value, the multiplier, or "basic income unit" as it has come to be called, determines not only the total Government

grant but the grant for each institution, saving only for special extra-formula grants. In 1967-68, the value of the basic income unit was \$1,320. For 1968-69, the value was set at \$1,450, an increase of just under ten per cent. With close to four per cent inflation, there was thus a real increment of a little over five per cent in the total financial support available for the same unit of work. This was justified, at the time, by the fact that many items of university expenditure were increasing in unit cost more rapidly than indicated by the general consumer price indices. Beyond this, there was an obvious need to continue to provide increased resources for program development.

For 1968-69, operating support for the provincially assisted universities was initially estimated to cost \$202,619,162, based on the income unit of \$1,450 and an enrolment projection of 80,972 full time students. This enrolment projection reflected the combination of estimates of the individual universities, which was checked against grade 13 enrolment trends, and total enrolment projections for Ontario. Actual university enrolment in 1968-69 substantially overran projections in Ontario, as in most other parts of Canada. This in turn led to extra operating costs and grants, for provincially assisted universities, amounting to some \$12.7 million.

It must be acknowledged that this experience emphasized the open-endedness of the formula grant mechanism in subjecting government to unanticipated expenditure. It can be argued on the one hand that this is an inevitable result of government policy to provide places for all those qualified and wishing to pursue university studies. On the other hand, such unanticipated costs are clearly unattractive and some devices for evading them or softening their impact may have to be found.

By the fall of 1968, when it came time to consider support for the fiscal year 1969-70, the financial climate had changed considerably. After considering the position of the universities and their requests for increased support in the light of the general economic situation, the Committee on

University Affairs recommended an increment of 6.2 per cent in the value of the income unit, to \$1,540, as part of a total program of operating support to cost \$272 million. The Government, after review, indicated that \$267 million could be provided. After further deliberation and a review of priorities, the Committee on University Affairs proposed that the income unit should be set at \$1,530 for 1969-70. This provided an increment of 5.5 per cent from the year before, against an escalation in the consumer price index of 4.1 per cent over the same year in Ontario. The real increment in cost of a unit of work is thus small.

In speculating on future trends, various alternatives can be identified using the relevant data set out below for the 1968-69 and 1969-70 years:

	1968-69 Actual	1969-70 Projected
Full time equivalent students	97,086	109,185
Basic Income Unit value	\$1,450	\$1,530
Basic operating income (\$ million)	\$ 238	\$ 287
Formula fees (\$ million)	\$ 46	\$ 51
Formula operating grants (\$ million)	\$ 192	\$ 236
Extra-formula grants (\$ million)	\$ 17	\$ 13

For 1969-70 the total enrolment is projected at 109,185 students (full time equivalents), an increase of 12.5 per cent, which alone would lead to a cost increment of \$29.9 million. But, as has been noted above, the formula unit value for 1969-70 was set at \$1,530, leading to a cost increment of \$14.7 million. At the same time, and reflecting a slightly larger proportion of students in graduate and professional courses, there was a small yet significant increase in the average weight under the formula from 1.69 to 1.72, a 1.8 per cent change, which is projected to cost \$5.2 million. Of the total cost increment, amounting to \$49.8 million, \$9.6 million would have been met by tuition fees had the 1968-69 percentage contribution of these fees to total ordinary income (19.2 per cent) been maintained. But since fees are being held virtually constant, their percentage

contribution to total ordinary income is expected to drop to 17.8 per cent. As a result, they will contribute only \$5.4 million to the total cost increment, which of course means an increase of \$4.2 million in the share of costs supported by formula operating grants. The only reduction in cost anticipated for 1969-70 is in the extra-formula allowances for new universities and programs where the total recommended finally is expected to cost \$13.2 million.

It is apparent from the figures cited above that the cost increment for 1969-70 is primarily a result of compounding cost increments due to increases in the total number of students, increases to offset fixed fees, an increase in unit cost to offset inflation and, finally, any possible increase in *real* unit cost. Demographic distributions indicate that the *rate* of increase of the age group from which university entrants come will decline, but absolute numbers will continue to increase rapidly, along with the proportion seeking to enter full time higher education. It is fairly easy to see how annual cost increments of well over 20 per cent may arise. It is not as easy to contemplate the compounding of such rates of increase in university grants over a span of several years.

In seeking possible ways to reduce this rate of escalation, a number of alternatives can be considered. In brief, these are as follows:

*To economize*, by re-allocating resources, rationalizing the effort of the universities, and terminating programs that have outlived their usefulness. While such efforts are essential (and in fact already in hand in varying degrees), the benefits will not be enormous, will take some time to realize, and can be wrung out of the system only once.

*To improve productivity*, initially and quite easily, by filling "empty" places in programs that now have less than viable enrolments, and hopefully later through the use of technology. Few of the experiments yet undertaken with educational technology provide attractive cost/benefit evidence. Too often innovations simply involve additional

costs with no change in other activities or costs. It is necessary now to think instead in terms of trade-offs and alternatives.

*To restrict entry*, so that a smaller proportion of students would attend university and available resources might provide for improved relative support for such a smaller intake.

*To mobilize other sources of income*, as by shifting a significant portion of the burden of cost from the taxpayer to the individual by increasing fees with some appropriate loan system to enable a student to proceed against the prospect of future earnings.

*To change the character of university study*, as by making a major shift to part time study.

*Or, finally, to allow some significant deterioration in quality.*

Some of these alternatives are obviously easier and more attractive than others, but if the expected pressures are felt, all must be given the most serious consideration.

Some preliminary discussions have already been held between the Committee on University Affairs and the Committee of Presidents in an effort to determine some way to measure or observe the relative impacts of resource reallocation, productivity changes, and absolute changes in quality. Difficult as it may be to make such measures, the effort is obviously worthwhile. The formula at least provides an index of activity on a consistent measuring scale. Much more work, research and debate will certainly be required before the problem of relating requirements and means for financing higher education in the 1970's can be resolved.

#### Extra-formula support for emerging universities

For the emerging universities, all the pressures for expansion and enrichment that are normally found in



established universities are felt. Beyond this, small enrolment, inevitable in newer, small universities, necessarily leads to higher unit costs; yet, on the other hand, such newer universities are naturally eager to broaden their scope of activities.

It has been argued that the creation of new universities with unrestricted charters has endowed them with a right to develop any programs that they might feel appropriate for the development of the institution and its services to society—with a concomitant obligation on the part of Government and the taxpayer to provide the financial support for such development.

In a world without scarcity, such aspirations for intellectual accomplishment and service might all be realized. And it must be acknowledged that in recent years in Ontario it has seemed that financial support was a function of statements of aspirations. More recently it has become painfully clear that the pace of realization of aspirations must reflect a balancing of the availability of resources with assessment of need for particular development.

It follows from this that there has been a natural and unsurprising difference between the unfulfilled aspirations of the new universities as seen from within, and a reasonable pace of development for those institutions as seen from without. In specific terms the emerging universities in Ontario, compelled by their not inconsiderable aspirations, have requested very large annual increments in support over the past few years and have indicated no early diminution of need for extraordinary support. The Committee on University Affairs has each year in its annual recommendations proposed only such support for the emerging universities as would provide for what it felt to be a reasonable pace of development, in view of the needs of the province as seen in totality. As well, the share of the total university dollar that could be earmarked for the development of new institutions was considered in relation to the amount that must be provided for the continuing maintenance and rapid growth of the more mature universities.

Until the adoption of the operating grants formula in 1967-68, it was very difficult to assess the magnitude of extraordinary support being provided for the emerging universities, and in the institutions themselves there was an inevitable tendency to expect that the patterns of faculty/student ratios and high unit costs established in the early years would prevail almost indefinitely. With the adoption of the operating grants formula in the fiscal year 1967-68, it became possible to identify in quantitative terms an extra-formula increment measured simply as a percentage of total ordinary formula income.

In the fall of 1967 the Committee on University Affairs requested five year projections of extra-formula cost requirements, and the requests by the universities were as indicated in Table 2 which shows measures of extra-formula support for the period 1967-68 to 1972-73. While the percentage allowances requested show some reduction over time, this reduction was in fact smaller than the anticipated rate of increment in enrolment so that in total dollars the extra-formula allowance requested was actually *increasing* through this period in most cases. Following lengthy discussions and special meetings with the institutions concerned, the recommendation of the Committee on University Affairs for fiscal 1968-69, with a set of tentative recommendations for subsequent years in the quinquennium, reflecting enrolment projections, were made as indicated in the tabulation. While the Committee on University Affairs indicated that it was quite prepared to review detailed consequences of such patterns of operating support on a year to year basis, the general sense of the proposal from the Committee was quite clear. The new universities should “emerge” as quickly as possible.

In qualitative terms, the view of the Committee on University Affairs was that it would be unreasonable not to provide sufficient support to build the necessary foundation for the important role the new universities would have to carry in the future in the total system of higher education in Ontario. Support level should be sufficient to provide high

**TABLE 2**  
**EXTRA-FORMULA SUPPORT FOR EMERGING**  
**UNIVERSITIES**

*Expressed as percentages of ordinary formula income*

	Brock %	Lakehead %	Laurentian %	Trent %
Requested by universities in fall of 1967				
For 1967-68	195	70	70	216
1968-69	158	55	55	184
1969-70	152	46	39	167
1970-71	143	38	31	157
1971-72	135	32	25	144
1972-73	125	26	—	132
Recommended by CUA in January, 1968				
For 1968-69	80	30	30	80
*1969-70	60	20	20	60
*1970-71	40	10	10	40
*1971-72	20	—	—	20
*1972-73	—	—	—	—
Revised university requests in fall of 1968				
For 1969-70	60	25	25	75
1970-71	40	20	—	60
1971-72	20	17	—	45
1972-73	—	14	—	33
Recommended by CUA in January, 1969				
For 1969-70	60	25	25	65
1970-71	40	20	20	50

\*Tentative

academic quality. It was equally evident that a careful distinction must be made between extra costs due to "emergence" (i.e., newness and smallness) and extra costs which would be inconsistent even with the operation of a mature, viable university. The Committee on University Affairs felt that extra support should be provided to meet the former costs, but that extra support should not be provided for the latter costs.

Following the submission of these recommendations by the Committee on University Affairs in early 1968, the universities concerned accepted the sense of the argument and distinction noted above, but claimed that the grants recommended were not sufficient to fulfil these objectives.

As a result, the Minister in April, 1968 requested a special study to be undertaken to pursue these matters in much more detail. This task was carried out by M. Elizabeth Arthur, Maurice J. Lavigne, David W. Slater and Douglas T. Wright and completed and reported by July, 1968.\*

It is undoubtedly difficult to deal with the issue of testing need for extra-formula operating support for the emerging universities in an abstract fashion. As a matter of principle, the Committee on University Affairs has held to the view that specific recommendations affecting individual institutions should refer only to financial support. That is, to preserve university freedom in decision making and in the ordering of priorities, neither the Committee on University Affairs nor the Government should indicate in detail how budgets should be drawn up and how decisions should be made in internal resource allocations in any of the Ontario universities. In trying to adhere to such practices which tend to preserve and protect autonomy, the problem naturally arises that the universities affected may claim that levels of support prevent effective operation. One approach to this problem was proposed by the Research Committee of the Committee of Presidents in a study which suggested "emergence at a

\*Ontario Committee on University Affairs Special Study Sub-committee, *Study and Report on Operating Support for Emerging Universities in Ontario, Fiscal Year 1968-69*

weighted enrolment of 4,000 to 5,000.”† This study was reviewed carefully by the Committee on University Affairs but was felt to be unconvincing because of uncertainty about some of the assumptions used and because it did not show even for an enrolment scale of 4,000 how effective operation could be assured without continuing extra-formula support.

The approach taken by the Minister’s special study committee had two features. On the one hand, a complete review was undertaken in each emerging university of the scope of program development, details of courses offered, enrolment on an individual course basis, teaching loads, and other aspects of academic and non-academic costs which necessarily involved a scrutiny of academic programs of a sort which had never been undertaken before. On the other hand, efforts were made to model a hypothetical university through an emerging period on the basis of certain general assumptions about class sizes, scope of program, teaching loads, and cost parameters.

As a result of all this work, the special study subcommittee concluded and recommended that some small adjustments should be made in support for 1968-69, and that support for subsequent years should be reviewed more carefully when the universities themselves had undertaken further study. Some of the other general conclusions of the special study subcommittee are significant enough to reproduce here:

“It is probably fair to say that the emerging universities in Ontario have not had a sufficiently clear basis for financial and academic planning through the whole of their period of emergence. They have all had some indications that they can point to as forecasts of quite large and enduring special support for emergence, but they have also all been given indications, from time to time during the last three years, that some of their expectations about the size and duration of extra support for emergence were overly optimistic. However, the signals have apparently never been treated as sufficiently clear, definite and unchange-

†*Report of the Subcommittee on the Financing of Emerging Universities*, Committee of Presidents of Universities of Ontario, 1967.

able to warrant their making a firm plan for living on formula income. The forecasts of five year growth in revenue and expenditures presented to the Committee in the autumn of 1967 gave little indication that the emerging universities expected to balance their budgets by 1972-73 on the basis of the ordinary formula levels of operating grants. Hope for *sui generis* support apparently springs eternal.

“The special study subcommittee was surprised to learn in the course of its studies that some of the emerging universities have not yet undertaken studies to project their operations onto ordinary formula support. With its recommendations for 1968-69 the Committee on University Affairs made tentative recommendations concerning future extra-formula support. These recommendations will need to be reviewed in the next few months in order to provide a firm long-term planning base for the emerging universities. It is imperative that the universities concerned should begin to make careful studies of these matters.

“It is our impression that the general strategy of development of the emerging institutions in the next few years should be to limit very severely the growth of new courses and the addition of staff for undergraduate teaching; to weed out the excessive richness of course offerings which they now find; to expand their student numbers quite considerably so that the student/faculty ratios and the average sizes of course-section increase substantially (doubling at least in most institutions) and to reduce their costs per student and per student course substantially so that they can live on formula income relatively soon. We are convinced that adequate flexibility could be provided to round out course offerings and to enrich some programs by weeding, and by effective use of a limited growth in operating budgets. The emerging institutions can achieve high quality, good experimentation with new programs and courses, academic attractiveness and financial viability on



formula income, and soon, we believe.

"As a closing comment, on academic affairs, we would say that, with some notable exceptions, we have the impression too that the emerging universities are cast too much in the mould of the older institutions. They have not been as innovative as might have been hoped in finding unfulfilled needs, in exploring new but *efficient* approaches to teaching and scholarship, and in finding new relationships to the needs and interests of the community. The repetition of the honours degree-general degree pattern found in many of the older universities is a common feature, rather than experimentation with new patterns of general degrees, joint honours course arrangements and any new pattern of master's degrees. Some of the pedagogical experiments in the newer institutions have been interesting, but rather poorly related to the economics of scale of the experimental methods. Honours programs have been offered in forms and fields in which there is clear evidence of redundancy in the province while new programs have not been offered. We do not want to overstate the case, but it is only fair to note that an excessive copying of the older institutions by the newer ones will not only lead to needless duplication and continued gaps in offerings, but also frequently will lead to high cost-small scale operations in the new universities."

Within the next few months, much more work was done in the universities concerned, which led to a greatly improved basis for planning and projecting costs for the interviews which were held with the universities in the fall of 1968. As a result of these interviews, and this additional work, as well as revised enrolment projections, the Committee on University Affairs recommended a revised pattern of extra-formula operating support for the three fiscal years up to and including 1971-72, as also listed in Table 2. The work was left at this point because of the prospect for some general revision in the treatment of general arts and science,

necessitated by the adoption of the Macpherson recommendations at the University of Toronto. The final processes of "emergence" can probably be developed fairly readily once the effect of the Macpherson reforms has been established.

While the amount of work involved in all this has been quite considerable, as reflected in the portion of this report devoted to this topic, the past year has seen profoundly important improvement in planning for the emerging universities with a final and not too painful resolution of the conflict between their aspirations and the means of the province to support their development.

#### **Extra-formula support for other new programs**

Much as with the emerging universities, the Committee on University Affairs has endeavoured to provide a long-term planning basis for other instances of extra-formula support. With the sole exception of the provisions for extraordinary support for bilingual operations at Laurentian University and the University of Ottawa, patterns of extraordinary support now provide for reductions year by year as enrolment increases and the program concerned becomes established and viable. From work commenced in 1967, the Committee on University Affairs, following consultation with the universities concerned, has been able to establish a basis for the phasing out of all extra-formula support over the next few years. In some cases, extra-formula support has been recommended on a simple dollar basis, while in other cases it has been recommended as a percentage increment to the formula, as in the case of the emerging universities.

Table 3 indicates the results of this work. It will be seen that the rates of de-escalation vary considerably, reflecting the different circumstances of the various programs.

Beyond establishing a standard for the requirements for extraordinary support for new programs established in recent years, the Committee on University Affairs has reviewed all proposals for the inauguration of new programs. In each case the Committee asks that information be tabled concerning enrolment and financial aspects for a five year term, along

**TABLE 3****EXTRA-FORMULA SUPPORT RECOMMENDED FOR NEW AND SPECIAL PROGRAMMES**

University	Description	Actual 1968-69	Recommended for				
			1969-70	1970-71	1971-72	1972-73	1973-74
Guelph	Trimester System	\$ 475,000	\$ 400,000	300,000	200,000	—	—
	Veterinary Medicine	750,000	—	—	—	—	—
Lakehead	Biology Station	30,000	30,000	—	—	—	—
Laurentian	Bilingualism	219,880	258,218	—	—	—	—
	Nursing	25,000	25,000	—	—	—	—
McMaster	Health Sciences	1,950,000	1,850,000	1,700,000	1,000,000	400,000	—
Ottawa	Bilingualism	1,390,083	1,696,839	—	—	—	—
	Medicine	75,000	—	—	—	—	—
Toronto	Medicine	1,950,000	—	—	—	—	—
	Dentistry	175,000	—	—	—	—	—
Waterloo	Optometry	5,000	—	—	—	—	—
	Purdue Scheduling	—	—	—	—	—	—
	Models	40,000	—	—	—	—	—
Western	Dentistry	650,000	367,200	45%*	30%*	20%*	10%*
	Information and Library School	175,000	175,000	100,000	—	—	—
Windsor	Law	325,000	200,000	100,000	—	—	—
<b>TOTAL</b>		<b>\$8,234,963</b>	<b>\$5,002,257</b>				

\*Expressed as percentages of basic operating income for dentistry.

with information about the nature and purposes of the program. The Committee on University Affairs deals with these by putting each into one of three classifications. The first is that class of new programs which require "starting up" costs which are significantly large as a portion of the total university budget, programs for which there is clear need in the province, and for which extraordinary support must be recommended. Following the rapid expansion of the scope of programs in Ontario through the mid-sixties, there have been very few new programs deserving the inauguration of such extraordinary support in the past two years. The second class of proposed new programs comprises those which, in the opinion of the Committee on University Affairs, would be obviously redundant, involving unnecessary duplication. In these cases the Committee on University Affairs has recommended that not only should no extraordinary support be provided, but that enrolment in such programs should *not* be eligible for counting for ordinary formula grants. There have been very few such instances. Third, and quite the largest class of new program proposals are those which appear to be reasonable and appropriate developments with a clear prospect of having viable enrolment, thus involving no unnecessary duplication, but for which extraordinary support cannot be justified. In some cases these programs are not immediately viable but when the "starting up" costs are relatively small in terms of total university budgets, the view of the Committee on University Affairs is that the expenses of the inauguration of such new programs should be carried within ordinary total university budgeting.

This general procedure seems to be working reasonably well. There is certainly evidence of much careful work by the universities in preparing new program proposals. It seems quite appropriate that the universities rather than the Committee on University Affairs or the Government should have the primary responsibility for ascertaining whether sufficient market exists to make a proposed new program viable, and the cognate responsibility should be left with the institution to abort the program if it does not prove to be

effective. It is impossible to imagine that any central authority could readily enforce such decisions.

There is one other kind of extraordinary support for which a strong case may be made—for experimentation leading to significant innovations or to such benefits as major productivity improvements. While a good deal of worthwhile experimentation is going on and numbers of major reforms have been introduced in recent years, it is probably true that even more radical changes in programming and teaching methodologies are worth study and experimentation. The Committee on University Affairs has not received any serious requests for support for such activities. It is probably fair to observe that, until more experience is gained with the operating grants formula in practice, it would be difficult to distinguish between requests for support for genuine innovation and requests for *sui generis* support.

#### Formula revisions

In the work that led, through 1965 and 1966, to the development of the operating grants formula, it came to be realized that two quite different approaches were available for the determination of the weights which describe the relative average costs of different classes or categories of enrolment. On the one hand, an analysis of university expenditures using cost accounting techniques could have been used, although the problems and difficulties of resolving the allocation of certain kinds of "overhead" expenditures, and the allocation of costs would be great for services such as those provided by the library. At the time it was felt that such a cost accounting approach would have presented too many difficulties and would have taken too long a time. Accordingly, an alternative and much simpler approach was used. This was to find a set of weights which replicated previous grants and total operating income for a representative sample of universities. This approach would not have been practicable had Ontario not had half a dozen or more universities operating on a viable scale, with different enrolment mixes and with what were generally accepted to be equitable allocations of



operating income and grants. Using the enrolment and grants for the three fiscal years 1964-65, 1965-66, 1966-67, it was in fact found that a relatively simple table of categories and weights replicated previous grants quite precisely. It was these categories and weights which were then recommended for the initial operating grants formula policy and which, with only minor changes, have been used since 1967.

At the time the original proposal for the operating grants formula was put forward, it was acknowledged that continuing study of the impact of the formula and of evolving cost patterns would be needed to provide feedback for formula revisions. At that time there was being inaugurated a general study of unit costs in Canadian universities under the auspices of the Association of Universities and Colleges of Canada, the Canadian Association of University Teachers and the Canadian Association of University Business Officers. Because of the problems of definitions and difficulties of uniform accounting methods, it now appears unlikely that this national study will lead to conclusive results. The hoped-for general revision of the formula weights which had been intended for 1970, following receipt of results of the national study, must now be deferred until cost data for the Ontario universities can be developed. It seems essential that this should be done. The nature of the formula and the basic intention of the interested parties whose co-operation led to its development and application is such that individual category weights should be subject to change in response to variations in relative costs of different programs. Since the formula is not intended to constrain resource allocation in individual institutions to these weights, it can be expected that unit costs will vary substantially among institutions. The formula weights should then express some province-wide averages of actual unit costs. Discussions have commenced already between the Committee on University Affairs and the Committee of Presidents to determine how a computer-based information system may be evolved which would, among other things, provide such unit cost information.

It is important to realize that the formula was never

intended to, and does not need to, respond to small variations in unit costs. It is obvious that there must be wide variations in unit costs among different courses or programs that are embraced by a single formula category; for example, between programs in English or History with large enrolments and programs such as Classics or Asian Studies, with small enrolments, all of which are included under the category "Arts". There is no benefit to be achieved in increasing the numbers of reporting categories. It seems most likely the formula will continue to work most effectively if it is kept as simple as possible.

A reflection of these notions may be seen in the impact of the Macpherson Report's recommendations on the structure and operation of the Faculty of Arts and Science at the University of Toronto. Where, formerly, there were four well defined and easily distinguished major classes or programs (honours and general programs in both arts and science) with fairly obvious variations in average unit costs, the new program in arts and science at the University of Toronto introduces much more flexibility and leads to a blurring of the distinctions that previously prevailed. The sense of the formula is, of course, that it should not "drive" curricular development. Changes in program and/or pedagogy should be neither rewarded nor penalized financially. Accordingly, in responding to the changes in the University of Toronto, in the short run, the view of the Committee on University Affairs has been that the University of Toronto should receive the same order of total support as if the previous programming had been maintained. It appears that this may lead to some significant simplification in the original categorization of the formula, with honours and general programs in arts and science all grouped together into a single category with a weight corresponding to the effective average of the previous weights for the enrolment mixes prevailing. This would of course guarantee the continuance of comparable levels of support, while making possible program variations.

Another instance of the need for revision in the formula was found in the case of medicine. The original formula

weights were derived at a time when most clinical teaching was done by part time appointees. Just at the time the formula was being applied, there was a general shift towards the use of geographic full time clinical teachers in faculties of medicine, following a trend current in many other jurisdictions. This change necessarily led to higher unit costs, and a special committee was convened in 1968, including representatives of the Committee of Presidents, of the Council of Deans of Medicine, of the Council on Health, of the Senior Co-ordinating Committee, and of the Committee on University Affairs, to analyze cost trends. Vice-Principal L. G. Macpherson of Queen's University undertook some detailed cost studies for this special committee. Following this work, the Committee on University Affairs recommended a revision in the weighting number for medicine from three to five. An important precedent was established by the Committee on University Affairs when, noting pressure toward even higher relative weights for medicine because of the increasing emphasis on research as opposed to teaching, a recommendation was made that there should be no consideration of any change in the relative weight for medicine for at least another three years.

The treatment of graduate enrolment under the formula is also under continuing review. The working group that had prepared the first formula recommendation had identified and acknowledged that graduate research was conducted on a year-round basis. The weights originally established reflected this view and in the administration of the formula, enrolment was reported on a trimester basis (fall, winter and spring terms or semesters). Because several universities had not formally adopted the notion of the summer semester, with the attendant requirements for registration and record keeping and the like, a simplified procedure was followed in 1967-68 and 1968-69 in which enrolments were reported as accurately as possible on a three semester year, while grants were determined as if the spring enrolment were the same as the winter enrolment. For 1969-70, the Committee on University Affairs recommended that the originally intended semester counting prevail since, with two years' notice, it was felt that

the universities had had sufficient time to prepare for third term registrations. Corollary adjustments were made to the awards paid under the Province of Ontario Graduate Fellowship Program so that the value of the award was the same in each of the three semesters.

The duration of degree programs in the graduate schools is, of course, more variable than at the undergraduate level. As a result of considerable discussion and study, the notion has been developed of establishing both minima and maxima entitlement for counting, and thus for grants, for individual students proceeding towards their degrees. At the expense of some more detailed record keeping, it would appear that such a development would protect essential interests of both the universities and the Government. It is hoped that final recommendations on this can be prepared by the fall of 1969.

All of this work is handled primarily by the Joint Subcommittee on Finance/Formula. Because of the importance of the work of the joint subcommittee both in terms of particular studies and perhaps even more critically in terms of its general style of approach and the principles followed, the subcommittee has arranged to have the minutes of its meetings made available to the universities. It is hoped that the improved understanding engendered by this step will facilitate the very complex and difficult task of maintaining the system of objective formula-based university operating grants.

The development of better criteria for the determination of needs for capital support for the Ontario universities continues to be one of the principal concerns of the Committee on University Affairs. In the last report of the Committee on University Affairs, an account was given of the evolution of capital policy from 1964 to 1967. In 1967 it was agreed between the Committee on University Affairs and the Committee of Presidents that work should be undertaken with a view to developing a capital grants formula by the end of 1969. Some of the main features of this task were described initially in the last report.

Objective measures of need for capital resources must reflect the extent and quality of the resources already available, as well as notions of standards for space occupancy and utilization. While the very major task of developing such measures had been inaugurated in 1967 by the Joint Capital Studies Committee, no results were available when recommendations for capital support for 1968-69 had to be prepared. To supplement the usual information about proposals for individual projects, the Committee on University Affairs had prepared a thirteen year analysis of capital support provided by the province for each university. It proved possible to determine a measure of the capital cost per student for the enrolment increment over the period during which the great bulk of growth has occurred. Capital allowances in earlier years were corrected, using building cost indices, to provide measures in terms of 1968 building costs. The results, presented in Table 4, are of interest but by no means conclusive. It is clear that these numbers embrace quite different enrolment mixes, quite different spectra of age and quality distribution of buildings, and the need for significant initial "starting up" costs on new campuses. Nonetheless, these numbers were of considerable use to the Committee on University Affairs in developing its recommendations for capital support for individual universities in the fiscal year 1968-69.

By early 1968 it had become apparent to the Committee that significant improvements in utilization could probably be

**TABLE 4**  
**CAPITAL SUPPORT TO ONTARIO UNIVERSITIES**  
**1955-68**

*Capital assistance expressed in 1968 dollars on basis of  
Southam's Construction Indices*

Institution	Capital assistance 1955-56 to 1967-68 ( \$000's ) (1)	Difference between actual enrolment 1955-56 and indicated capacity, Sept. 1968 (2)	Capital assistance per additional full time student place \$
Brock	10,917	1,412	7,732
Carleton	46,774	5,347	8,748
Guelph	28,667	4,281	6,696
Lakehead	12,173	2,257	5,393
Laurentian	11,264	1,851	6,085
McMaster	48,208	5,047	9,552
Ottawa	34,727	3,502	9,916
Queen's	36,685	3,981	9,215
Toronto			
Main	96,253	9,814	9,808
Scarborough	24,567	1,400	17,548
Erindale	3,909	385	10,153
Trent	13,043	967	13,488
Waterloo	62,909	7,187	8,753
Western	42,054	5,572	7,547
Windsor	37,737	3,322	11,360
York	69,367	5,667	12,240
<b>TOTAL</b>	<b>\$ 579,254</b>	<b>61,992</b>	<b>Average \$ 9,344</b>

*Notes: (1) Government assistance only.  
(2) Indicated increase in student places.*



achieved in some types of facilities, that the total aspirations of many of the provincially assisted universities seemed to suggest lowering rather than raising levels of utilization, and particularly that some projects proposed for immediate construction might lead to significant imbalances between different kinds of facilities.

A case in point was the development of library facilities, and meetings were held in the summer of 1968 with the universities to review plans for their development. As a result of these discussions, which focussed on immediate plans for library development in several universities, certain general propositions concerning the use of libraries were developed and accepted by the Committee of Presidents and the Committee on University Affairs. These are discussed further in a subsequent section of this report. With respect to capital development, the universities concerned made certain revisions in their immediate plans and in general were able to assure the Committee on University Affairs that the new library buildings were in fact of general potential usefulness for offices and for teaching and other functions.

By the fall of 1968, as part of the general view of developments over a five year period, the universities had been requested to compile and submit total capital program proposals for the entire period, with indications of priorities. The submissions were discussed at each university at the meetings held during that fall. The procedures through which the universities prepared their capital forecasts varied considerably. In a few cases submissions reflected analysis, review, and the use of standards of a consistent and realistic character. At the other extreme, some universities simply tabled what can only be described as the raw unadulterated aspirations of their various departments and faculties. Needless to say, in these cases the estimates of capital requirements were wildly unrealistic. Between such extremes fell the rest of the universities. With such inconsistencies from the universities on the one side, and on the other side faced with a clear need to provide convincing argument for the capital resources required, the Committee on University

Affairs realized that it could not simply await the expected report of the Capital Studies Committee at the end of 1969 when some notions of objective standards were required for the 1969-70 year.

As a result of a very intense effort during January and February of 1969, the Committee on University Affairs developed an interim capital grants formula. While the general form accorded with the directions already indicated by the Joint Capital Studies Committee, it was of course impossible to deal explicitly with all factors that ultimately must be acknowledged in a capital formula. The approach taken was simply to determine total needs, embracing *all* university buildings for all purposes and activities, save only residences, using measures of assignable area \* determined according to a formula that, like the operating grants formula, assigned relative weights to different categories of enrolment based on a unit allowance of 96 assignable square feet, leading in turn to a total overall system average of 130 square feet per student. The categories, weights and resulting areas were as follows:

Categories	Weighting	Total Net Area per Student
Undergraduate arts, general science, etc.	1	96 sq. ft.
Honours science, undergraduate professional courses, Master's course in non-laboratory subjects	1.5	144
Master's level in laboratory subjects	3	288
Ph.D. in non-laboratory subjects	2	192
Ph.D. in laboratory subjects	4	384

\*Assignable area is the net plan area, excluding corridors and circulation space, mechanical service area, walls, janitors' closets and so forth.

TABLE 5

**SPACE REQUIREMENTS FOR ONTARIO UNIVERSITIES 1969-74***In thousands of net assignable square feet*

	BROCK	CARLETON	GUELPH*	LAKEHEAD	LAURENTIAN	McMASTER	OTTAWA	QUEEN'S	TORONTO	SCARBOROUGH	ERINDALE	TRENT	WATERLOO	WESTERN	WINDSOR	YORK	UNIVERSITY SYSTEM
69/70 Total space required	154	764	840	253	159	994	755	889	2,287	166	92	133	1,150	1,119	591	873	<b>11,238</b>
Space available	296	1,133	1,711	469	427	880	519	940	2,298	195	48	356	1,102	979	540	1,102	<b>12,995</b>
New space needed	(142)	(369)	(871)	(216)	(263)	114	236	(51)	(1)	(29)	44	(223)	48	140	51	(229)	<b>633</b>
70/71 Total space required	228	839	957	270	188	1,086	829	944	2,344	193	126	158	1,244	1,161	690	1,072	<b>12,359</b>
Space available	296	1,133	1,711	469	433	952	519	940	2,350	195	173	356	1,102	1,135	593	1,279	<b>13,636</b>
New space needed	(68)	(294)	(754)	(199)	(245)	134	310	4	(6)	(2)	(47)	(198)	142	26	97	(207)	<b>713</b>
71/72 Total space required	287	906	1,059	296	214	1,196	877	1,023	2,353	226	160	188	1,330	1,224	776	1,253	<b>13,409</b>
Space available	296	1,133	1,711	469	433	952	519	940	2,350	195	173	356	1,102	1,135	593	1,279	<b>13,636</b>
New space needed	(9)	(227)	(652)	(173)	(219)	244	358	83	8	31	(13)	(168)	228	89	183	(26)	<b>1,224</b>
72/73 Total space required	339	975	1,176	318	240	1,326	948	1,075	2,381	259	193	220	1,421	1,295	858	1,422	<b>14,492</b>
Space available	296	1,133	1,711	469	433	952	519	940	2,894	195	173	356	1,102	1,135	593	1,279	<b>14,180</b>
New space needed	43	(158)	(535)	(151)	(193)	376	429	135	(513)	64	20	(136)	319	160	265	143	<b>1,954</b>
73/74 Total space required	383	1,042	1,320	342	258	1,417	1,028	1,117	2,420	293	226	253	1,510	1,339	945	1,582	<b>15,533</b>
Space available	296	1,133	1,711	469	433	952	519	940	2,894	195	173	356	1,102	1,135	593	1,279	<b>14,180</b>
New space needed	87	(91)	(391)	(127)	(175)	465	509	177	(474)	98	53	(103)	408	204	352	303	<b>2,656</b>
74/75 Total space required	422	1,111	1,515	364	263	1,492	1,100	1,164	2,444	326	260	290	1,585	1,360	1,041	1,733	<b>16,548</b>
Space available	296	1,133	1,711	469	433	952	519	940	2,894	195	173	356	1,102	1,135	593	1,279	<b>14,180</b>
New space needed	126	(22)	(196)	(105)	(165)	540	581	224	(450)	131	87	(66)	483	225	448	454	<b>3,299</b>

*Total space required: Determined for projected enrolments according to the standards and weights of the interim capital formula; no acknowledgement has been made of minimum fixed requirements of new institutions, or of requirements for part time enrolments, and the like.*

*Space available: Inventory of stock of assignable space (including all non-residential space) as at 1st March, 1968, plus useable space made available as projects with final approvals which are now in construction reach completion up to September for each academic year. The inventory data tabulated is preliminary, and subject to change and correction. The inventory reported includes all assignable area regardless of quality, age and usefulness; on some campuses significant reductions in initial inventory will result from planned and necessary demolitions of obsolete space.*

*The above tabulation is exclusive of requirements for Health Science.*

*\*Inventory figures for the University of Guelph include all space at the institution, including that assigned to and reserved for research and service programs for the Ontario Department of Agriculture.*

Space requirements were determined according to the enrolment projections for each institution for each of the years 1969-70 to 1974-75. Fortunately, the development of the inventory for the Joint Capital Studies Committee had progressed to the point that by January, 1969, some initial results were available from the consultants. It was possible then to estimate the space available to each university over the same time span, including both buildings already in use and projects already under construction or committed for support, entering them in the tabulation in the years in which they would become available.

Table 5 shows the results of these calculations. The difference between the space requirements, determined according to the interim space standards and enrolment projections, and the expected availability of space measures the need of new space for each university year by year over the entire five year period. These measures must be acknowledged as rough and approximate. It was impossible to make any explicit acknowledgment of the age and quality mix of present inventories, of requirements of space for part time students, and many other factors which the Capital Studies Committee must ultimately include in their work.

The final recommendations of the Committee on University Affairs for 1969-70 included, then:

1. capital support to meet progress payments for projects previously committed — \$74.5 million;
2. capital support required for such undertakings as land acquisition and site development, needs for which cannot be determined on an objective basis — \$7.0 million; and
3. capital support requirements for new starts which would need to be undertaken in 1969-70 to provide for the physical resources needed to accommodate enrolment anticipated in the fall of 1971 — \$20.1 million; altogether totalling some \$101,000,000.

In translating measures of square feet required, as determined by the interim capital grant formula, into dollar

provisions, an average cost of \$50 per assignable square foot, reflecting recent costs for various kinds of university buildings, was employed. An additional average allowance of ten per cent, bringing the total to \$55 per assignable square foot, was made to provide for equipment cost, the need for which actually varies considerably from building type to building type. With an average ratio of assignable to gross area of 0.6, the average cost per gross square foot was \$30. It should be noted that this is intended to provide for total project cost including all design fees and planning costs, connection of utilities, and landscaping.

While the interim capital formula needs further refinement, it provides a much better basis for university planning than has existed before, and should serve effectively for this purpose until the final capital grants formula is introduced. It is important to realize that the aim both of the interim formula and of the intended final formula is to provide objective measures of needs against predetermined standards that assure full and effective utilization of physical resources. As with the operating grants formula, the capital formula is intended to determine total dollar allocations for individual universities, leaving each with the responsibility and authority for setting priorities and making internal allocations. The capital formula, again like the operating grants formula, is intended to provide incentive and reward for the effective use of capital resources. This may be done by the translation of estimates of space requirements to dollar allowances. If more space can then be obtained through careful design and economy, there would be an advantage to the institution.

In 1968-69, the Committee on University Affairs was asked to consider capital support for parking structures. Its recommendation was that such structures should be self-financed. In making this recommendation the Committee was aware that some capital assistance had been given in recent years to the provision of paved surface parking, as part of general site development costs. For consistency it was concluded that such costs should not be subsidized in the future.



It is probably fair to acknowledge that the digital computer ranks with the automobile as one of the important and pervasive developments of the century. The importance of the computer to modern society and the relevance of the computer to education, especially higher education, are compelling reasons for developing effective computing services in Ontario universities.

The Ontario universities have an impressive record of accomplishment and have won considerable acclaim for their work in computing, which includes a number of pioneering developments. Both the use of computers for teaching and research and the development of computing science as a subject are already well advanced, and growing at a rapid rate.

Since 1947, the National Research Council has provided grants to Canadian universities for the development of computing services, primarily to support research. Until about 1967, this was the only systematic support for computer hardware. In addition to NRC assistance, universities have found support for their computing activities through various research grants and contracts, through the occasional sale of excess computing time to outside users, and by allocating general revenue to the development of computing centres. With the rapid rise in the use of computers in teaching, the total needs for computing tended to outstrip ordinary sources of support. This led some Ontario universities, in 1966, to seek approval for acquiring computer hardware under the system established for financing capital projects by the Department of University Affairs. The development, in 1967, of tentative plans in most Ontario universities for great increases in computing power led the Committee on University Affairs to consider rationalization of computer hardware development, with a particular view to achieving economies of scale.

At about the same time, the Committee of Presidents established a subcommittee on computer services, in which each university was represented, in most instances by the director of the university computing centre. In February of 1968 this committee presented a report advocating the development of regional computing centres serving more

than a single institution, and specifically recommending that six such centres be established initially.

The Committee on University Affairs then decided to seek independent advice and retained Kates, Peat, Marwick and Company to assist in formulating policy concerning computer facilities and their funding, and particularly to assist in developing a short term plan of support for the development of university computing centres in Ontario. Because of the urgencies of preparing for the 1968-69 fiscal year, that report was completed in a little over a month in February/March, 1968. It concurred with the previous report from the computer subcommittee of the Committee of Presidents in the notion that regional computing seemed to be practicable and economically worthwhile, but suggested that one centre only be developed in the first instance for the sake of experience, and because of the difficulties anticipated. The Kates, Peat, Marwick report also discussed certain management and financing aspects which previously had not been considered.

After further consideration, the Committee on University Affairs recommended that a special fund of \$4,500,000 be provided in 1968-69 for computer hardware, with amounts of up to \$24 per "income unit" (according to the Ontario university operating grants formula) for university computing centres, and with the balance, somewhat less than \$1 million, reserved for the development of the first regional computing centre. This fund, earmarked for computers but distributed in a way similar to the operating grants, replaced the capital grants for computer hardware.

The special computer fund did meet the immediate needs for computer financing in Ontario universities and there was a general acceptance that regional centres could, if properly established, provide a feasible way of meeting new needs. The Committee of Presidents and the Committee on University Affairs agreed to establish a joint subcommittee to develop detailed plans for regional computing for the Ontario universities. The subcommittee was set up in July, 1968, with three members named by each body, and a secretary drawn from the Department of University Affairs. It has been aided in

its study by Mr. L. E. S. Green, whose services were made available by the Department of Treasury and Economics.

The joint ad hoc subcommittee was asked to study and advise on questions of location, services, participation, management, responsibility and timing for regional computing services, and to report by the end of 1968. In its work, the subcommittee accepted those precepts which follow from the general approach to university computer development envisaged by the Committee of Presidents of Universities of Ontario and the Committee on University Affairs, and which were recognized in the earlier reports. Briefly these may be summarized as follows:

University autonomy with respect to decision-making was to be preserved.

All universities should have equal access to low cost computing facilities.

As soon as existing commitments permit, computer funds should be absorbed into the general operating grants formula, in line with the policy that funds for operating purposes should not be earmarked.

The proposals should strive to maximize the services which are purchased with the funds allocated to computers.

The subcommittee realized that it had to consider and evaluate various alternatives before making a final recommendation. While it recognized that it could not possibly delegate the responsibility of making the final evaluation and recommendations, it could not readily carry out all the detailed analysis required. Accordingly, the subcommittee decided to seek the aid of Kates, Peat, Marwick & Company as consultants to assist in the technical work. The assignment to the consultants was to refine the criteria by which various alternatives could be judged, to catalogue alternative solutions, and to assess the alternatives according to the criteria established.

It was considered desirable to examine all promising alternative forms of computer facilities including stand alone facilities, regional centres in the sense of autonomous, dedicated university utilities, agencies for reselling excess

capacity at existing installations, and straight commercial utilities such as those operated by IBM or Computel. Variables included the numbers of centres, the possibility of mixed-mode solutions, location of the centres, and types of service. The alternatives were evaluated in terms of initial set-up cost, operating cost, cost of data-transfer, turn-around time, ease of installation and expansion, difficulty of recruiting staff, and managerial policy and inter-university questions.

In the course of its work, the subcommittee, with the consultants, realized that commercial management of a university computing centre, or simply the provision of service by commercial organizations, was a real and possibly attractive alternative. An invitation was therefore extended to several Canadian companies to elicit their interest and to determine their response to numbers of particular questions concerning service and cost.

During its deliberations the joint subcommittee reached agreement on a number of aspects which it regarded as general principles or constraints affecting the course of the study and the recommendations.

One of the first and most critical of these decisions was that computing services should *not* be planned for operation as a free commodity in a university. In the early days of computing it was inevitable, and even quite proper for the encouragement of wider use, that computing should be a free resource, available to all who troubled to make use of it. So long as the total cost involved was modest, representing only a small proportion of total university expenditure and presenting no difficulty in terms of control and growth, this procedure worked well and there was an effective rationing because of the difficulty of using computers. But as the use of computers has increased, as costs have increased – even in the face of the economy and great power of the modern computer – it has become necessary to think in terms of more effective allocation of the resource. In doing so, it would be improper administrative practice to have those who are responsible for providing the service undertake to choose amongst alternative users. Rather, the allocation of the

computing resource should be made part of the ordinary budgeting process. This means that the various users should be assigned computer hours, computer dollars or simple dollars which may be used for computing. It appears that several Ontario universities already have introduced such budgeting procedures. It was the view of the joint subcommittee that some such allocation procedure is necessary within each university. In the long run it may be simplest to allocate budget dollars to operating departments which may then use these funds for computing or other purposes.

Another question faced by the subcommittee was that of estimating computing needs. The extent of the use of computing in undergraduate teaching varies considerably from university to university. Nevertheless, it was felt to be possible to estimate computer use for undergraduate work from the experience of the institutions now making the greatest use of computing for teaching. This is in the expectation that most institutions will quickly increase the use of computing in undergraduate studies in all faculties, as described, for example, in the Pierce report, “Computers in Higher Education”,\* which predicts:

By sometime in the 1970's it is doubtful that more than a few per cent of the students will graduate without having made some use of computers.

The problems of estimating computing needs for research are much more difficult. Present levels of use provide no clear guidance because generally they have been established in situations where computing has been a free resource. The pattern of use which will emerge in the future is likely to be quite different from the current one — one in which disciplines such as medicine or sociology, for example, may be much heavier users of computer facilities than they are now. Research needs for computers are particularly hard to predict because research projects involving computers need for their

development not only available computers, but particular resources such as data banks and co-ordinated teams with specialized knowledge. The subcommittee came to feel that the best way to acknowledge the importance of computers for research was to ensure that an appreciable fraction, perhaps half, of the facility established for teaching would be made available for research purposes. This suggests that if the National Research Council of Canada continues making institutional grants for research purposes, these grants might be allocated to research users for purchase of computing time, i.e., it may be appropriate for NRC to change its policy and assign funds for computing as part of the ordinary grants-in-aid of research. Undoubtedly the special demands of those who use large amounts of computing time could best be met in this fashion. Such a policy is, apparently, being considered by NRC.

Another constraint acknowledged by the joint subcommittee was the present pattern of computer installations in the Ontario universities and the need to provide maintenance of support while new needs might be taken up by regional centre development.

Finally, the need for reliable service of high quality, the need for economy, the concern about the future, as well as the clear prospect that any compulsion to a particular solution would inevitably lead to complaints about the inadequacy of the service, led the subcommittee to the view that there should be no enforced monopoly. While stability may require contracts for a specified term when services are provided by a campus facility, by a regional centre, or by a commercial utility, the principle of maintaining competition now and for the future seemed to be of compelling importance.

Many alternative methods of financing were identified. At one extreme is the earmarking of support for regional centre development; at the other extreme is an unconstrained allocation of resources to be expended at the discretion of the universities. A brief discussion of these extremes provides a framework for the particular recommendations which followed.

In a constrained development, financial support for regional

\**Computers in Higher Education*, Report of the President's Science Advisory Committee (J. R. Pierce, Chairman), The White House, Washington, D.C., February, 1967.



centre computing would be paid to the universities, but restricted to being used for buying services from the regional centre. Alternatively, some variation could be developed in which funds were paid directly to the regional centre sufficient to offset part of its costs so that its charges for service would be so low as to strongly encourage universities to purchase computing from it. Such a policy would lead with certainty to the development of regional computing centres. It would appear to promote the efficient use of resources, because universities would be inhibited from developing less efficient, smaller-scale, stand-alone facilities. The disadvantages with a controlled pattern of development are also evident. Complaints necessarily would arise about the rationing procedure and about the adequacy and type of service; these would be almost impossible to counter. There is no guarantee that sufficient resources would be available to provide computing from regional centres free or at subsidized cost in such quantity as to meet all possible demand.

At the opposite extreme, all funds for computing would become part of general operating grants, to be allocated as are ordinary operating grants with no constraints whatsoever. This would leave universities free to develop independent computing facilities, to join in developing a co-operative regional centre, or to purchase computing from commercial utilities or from a university with excess capacity. The principal feature of unconstrained allocation of funds for computing is that resources would soon tend to be allocated efficiently since the amount and type of computing purchased by each institution would be determined in a competitive environment. With scarce resources, there would be a natural tendency to seek the best value. If the regional centre truly represented "best value" it would be chosen voluntarily, rather than by compulsion or coercion. Unearmarked allocation of university grants is fully in accord with principles now strongly established in Ontario for decentralized responsibility in decision-making. Allocations of resources within universities for library and other services are not now constrained, and each institution is left free, within the limits of the total resources available to

it, to try to optimize its total performance and services.

With such "unconstrained" development, a regional centre would appropriately be funded on a no-cost, no-loss basis, as a non-profit, co-operative facility. Even with the freedom indicated, it would still be necessary for clients to enter into contracts with a regional centre for periods of time sufficient to provide stability. With such fully decentralized decision-making, it would have to be acknowledged that it could not be certain whether a regional computing centre would ever come into existence, or remain in existence.

As a result of all these considerations, the joint subcommittee prepared a draft report, embracing a tentative proposal, distributed this and arranged for hearings in February and March, 1969. The tentative proposal was that a single regional computing centre should be established, not on the campus of any university, with an intermediate sized computer of the scale of the IBM S/360-65, organized as a co-operative in the style of the Triangle Universities Computing Centre,\* initially providing service for universities presently deficient in computing power.

The hearings revealed that the economies to be gained from the proposal were marginal at best and that in terms both of economy and variety of service better results might be achieved through a plural system in which each institution could choose freely between on-campus hardware, the purchase of services from other universities, or from commercial utilities.

As a result of all this, the final recommendation was developed that the monies reserved by the Committee on University Affairs for support both of university hardware and possible support of a regional centre should be disbursed to the universities, according to the relative weights under the operating grants formula, and that while initially intended for computing, such resources should not be specifically earmarked for this purpose. Depending upon their assessment of

\*F. P. Brooks, Jr., J. K. Ferrell and T. M. Gallie: *Organizational Financial, and Political Aspects of a Three-University Computing Centre*, Proc. of IFIP Congress 68, Edinburgh 1968, North Holland Publishing Co. Netherlands.

priorities, individual universities should feel free to spend more or less on computing as they judge appropriate. As a part of the general recommendations, and the condition for the support of these recommendations by the Committee on University Affairs, the universities agreed to establish a computer co-ordination group under the auspices of the Committee of Presidents, funded by a subscription of \$2.00 per income unit from all the provincially-assisted universities.

The computer co-ordination group would have as its objectives:

- a) To enable universities to exploit economies of scale through the pooling of their purchasing power for computing, and to explore modes of computing appropriate to the universities' needs. In particular, the merits of establishing a large co-operative computing facility will be examined and specific trial investigations involving available commercial services will be undertaken;
- b) To ensure that information relating to computing technologies is distributed to all Ontario universities, so that decisions can be made on the basis of the most complete information.

The computer co-ordination group will comprise a number of full time professionals. The subscription established will provide for an annual budget of the order of \$300,000 which will cover certain experimental projects as well as ordinary salary and overhead costs.

In concluding this section, it may be worthwhile to try to summarize the significance of what has been accomplished in the development of policies for the support of computing services. While it might have been dramatic to have developed, as a result of the efforts described, some physical manifestation such as a great computer with a label on it indicating that it was serving the Ontario universities, what has happened is perhaps more valuable and attractive. Financing for computers has been transferred from capital to operating account over the past two years and the sums provided for computer operation will, in the future, have to be determined in each university against the pressure of competing demands for other goods and services. This gives much better assurance as

to adequate needs testing on a decentralized basis in each institution where the most effective scrutiny can be given. Balancing this, the computer co-ordination group will provide service on a substantial basis to ensure co-operation and will introduce as well the benefits of collective bargaining power on behalf of all the universities. The Committee on University Affairs feels that as a result the pattern now established is the most likely one to lead to the economic and efficient use of computing services in the provincially-assisted universities.

As already noted, the Committee on University Affairs became concerned in 1968 when the development of plans for the expansion of libraries in several of the Ontario universities revealed an absence of inter-institutional co-ordination. Previously there had been an indication of commitment by the Ontario universities to co-operate in the use of the projected humanities and social sciences research library of the University of Toronto as a bibliographic centre and a special common resource for research and graduate study. Notwithstanding this general concurrence, it became clear to the Committee on University Affairs that system planning had not been taken to the point where it had come to influence planning in individual universities.

As a result of this concern, the Committee on University Affairs met with the Committee of Presidents to discuss library development in general and the projects then being proposed. Following these discussions the following general propositions were established, and agreed to formally by all of the provincially assisted universities:

That each university be prepared to commit itself to participate in an Ontario universities' library system, the principal features of which would provide for the various libraries to be essentially self-sufficient in the provision of service for undergraduate use, and to be effectively inter-dependent in the provision of service for research and graduate use.

That with such system development it would be anticipated that there would be appropriate co-ordination and centralization of technical processes, that library automation would be introduced where appropriate, and that there would be appropriate centralized storage of less frequently used library materials.

That the anticipated bibliographic centre would operate to facilitate such system development and enhance the development of specialized collections in the various

libraries which would, in turn, reflect research and graduate program specialities.

Along with this it was acknowledged that financial support for library development would be related to and be a part of the general provisions for operating and capital support for the Ontario universities. Support for acquisition of library materials and for library operation would continue to be derived from formula operating grants. Capital assistance for library development would be derived from general university allocations for capital purposes, which, with the anticipated capital formula, would acknowledge total available university fiscal resources.

On the basis of these general discussions and considerations, the Committee on University Affairs reviewed in particular the library development proposals then in hand, in terms of general scope and scale, unit costs, and related factors. Because modern university libraries tend to include, for the most part, large open spaces and office space, it is apparent that they can accommodate general office occupancies and some teaching functions until collections and library use build up to capacity levels. In view of this, the Committee on University Affairs sought and received assurances from the universities concerned that the library projects proposed could readily be used for general purposes.

The Committee on University Affairs has followed with interest the development of system planning by the Committee of Presidents and the Ontario Council of University Librarians, through committee work and the services of specialist consultants. In view of the general prospect for limitations on resources, it is certain that much more work is urgently required to provide for the design of acquisition and storage policies to optimize library services.



As in the previous review of the Committee on University Affairs, this report represents an effort to describe the nature, character and impact of the work of the Committee during the past year.

In the concern with administrative and managerial structures and policies recounted in these pages, and with evidence of financial pressures ahead, it might be possible to overlook the very great accomplishments that have been made in Ontario in the decade of the 60's. It is probably fair to claim that Ontario, with less stress and less wasteful duplication than most other jurisdictions, has successfully met the challenge of a fantastic growth in demand for university places. Over the decade the Ontario universities have provided for this remarkable rate of growth without coming apart at the seams, and with real net improvements in quality and competence. At the same time they have been involved in academic innovations as significant and as challenging as those in other jurisdictions and, in the past few years, have confronted and met demands for democratization and reform that have brought universities elsewhere to a standstill or to martial law.

For the 1970's the Committee on University Affairs foresees no diminution in the challenge to be faced. Acknowledgment has already been made of increasing pressures on finance and the difficult choices that must be made. There must be continuing re-assessment of programs and alternatives in order to determine how best to proceed. The extent of the resources ultimately made available for higher education in Ontario will reflect the wishes of the people of Ontario and the value they place on higher education.







